New and Noteworthy Diseases

The cereal rusts were exceedingly light in Western Canada in 1956. Air-borne rust spores were much less numerous than they have been for many years. Moreover, almost the entire wheat and oat acreage in Man. and eastern Sask. was sown to rust-resistant varieties. However, some leaf and stem rust development occurred in Alta. where an occasional field of wheat was severely infected and suffered some damage from stem rust.

Common root rot (Helminthosporium sorokinianum and Fusarium spp.) appeared to be fairly general on wheat throughout the Prairie Provinces. In Sask., where the disease was studied most intensively, it appeared to have caused little loss because growing conditions favored recovery of the crop from the initial stunting effects of the disease. Speckled leaf blotch (Septoria spp.) was again widespread on wheat in Western Canada but infection was generally light and yield losses resulting from leaf destruction probably insignificant. In 2 fields of winter wheat in Alta. trace infections of a bunt that microscopically resembled dwarf bunt were found. However, when the spores were germinated, they were found to germinate like those of common bunt. This experience emphasizes the need for great care in the diagnosis of even conspicuous pathogens. Scald (Rhynchosporium secalis) is the most important leaf disease of barley in Alta. and is increasing in severity in the northern parts of the province, where the barley acreage has been expanding.

A disease, not unlike crown bud rot that has been known on alfalfa for several years in Alta., was reported to be serious on alfalfa and red clover in Ont. Although flax rust is rarely encountered in the principal flax growing sections of Man. and Sask. because rust resistant varieties are almost exclusively sown, rust is causing severe losses in the Peace River district of Alta., where only early maturing (susceptible) varieties can be successfully grown. Observations on the rapidly expanding rapeseed acreage in Sask. indicate that diseases may soon become a factor in its production. The relative importance of the various diseases is still unknown, but the seed-borne pathogen, Alternaria brassicae was shown to be the cause of a common black spot on stems and pods. A root and stalk rot of soybeans, caused by an undetermined species of Phytophthora and first noticed in s.w. Ont. in 1954, was widespread and caused considerable damage in the area in 1956. Harosoy, a popular variety, is completely susceptible to the new disease. Leaf mottle, a disease of sunflowers and first described in 1948 (P.D.S. 28:32) from Man., has now been shown to be caused by Verticillium alboatrum (W. E. Sackston, W. C. McDonald and John Martens. Plant Dis. Reptr. 41:337-343. 1957). The disease causes a premature ripening and less frequently a wilting of the plant. The pathogen is known to cause wilt in potatoes and tomatoes in Man.

Bacterial ring rot (Corynebacterium sepedonicum) continues to be a problem in the growing of potatoes in Canada. Actual losses from the disease

in commercial potato growing areas are apparently insignificant, but under the present cultural practices this low level is being achieved only by constant supervision. Because of the limited success in stamping out ring rot, the various means by which the disease may spread as well as the effectiveness of present control practices are being reinvestigated.

In Canada as a whole, late blight (Phytophthora infestans) was less destructive than usual. Some reduction in yield occurred on Vancouver Island as a result of early defoliation of the vines. On the prairies vine symptoms were inconspicuous, but small amounts of tuber rot were relatively common. Late blight was more prevalent in s. Ont. than for many years, moisture and temperature being near optimum for long periods; losses were considerable. In contrast, late blight caused little damage in the Maritimes, notably in P.E.I. The disease appeared quite early but before mid-August cool, relatively dry weather allowed only slow spread. By digging time unsprayed fields were defoliated and most others were killed down by frost or a chemical vine killer. As a result, little tuber rot developed.

The report of Dr. R.H. Bagnall on potato viruses S and M underlines the difficulties of determining whether one or more viruses may be responsible for the symptoms observed. Undoubtedly one of the greatest difficulties is the finding of suitable screening and differential hosts. The finding of such hosts seems largely a matter of trial and error. Serological techniques, however, are providing an additional tool by which it may be determined whether or not, in the absence of symptoms, a virus has been transmitted. The studies of Dr. B.H. MacNeill on tomato streak reported in this Report emphasize the necessity of considerable experimentation before mixed infections can be accurately diagnosed.

The disease situation in the dry bean crop in s.w. Ont. has occasioned concern in recent years. Surveys of the crop by Dr. R.N. Wensley in the last two years have revealed that root rot is prevalent in the area. However, the predominant pathogen isolated from affected plants in 1955, a hot, dry year, was Fusarium oxysporum whereas in 1956, a cool, very wet season, it was F. solani f. phaseoli. During a later survey in 1956, Dr. R.L. Millar found that anthracnose (Colletotrichum lindemuthianum) was very prevalent on dry beans. When isolations from diseased material were tested on the standard differentials, the isolations all proved to be the alpha strain. Parallel isolations from snap beans grown in the Port Hope area yielded only the beta strain.

This year's observations on club root emphasize the fact that the disease is gradually spreading in Canada. In Quebec, club root is not only prevalent in the Montreal market garden area, but it was also recorded on turnip from 2 towns above Quebec City along the St. Lawrence River, from 2 smaller places in the Eastern Townships and from the northern mining town of

Rouyn in western Quebec. A striking illustration of its rapid spread once the disease is introduced into an area has been provided by Dr. O.T. Page. Club root was first observed in one field of cauliflower on the Bradford Marsh, Ont., in 1953. Next year it was found in another field on the same farm. In the fall of 1954 as a result of hurricane Hazel the entire marsh was flooded. In 1956 club root was found in most fields of cabbage and cauliflower examined, some fields being 5 miles from the originally affected field. Cercospora leaf spot (C. carotae) appears to be a well-established disease in market garden areas in Ont. and Que., where this year it was quite prevalent. Bacterial blight (Pseudomonas apii) of celery was apparently prevalent in the Bradford Marsh, Ont. Canker (Itersonilia perplexans Derx) is a new disease of parsnip reported here for the first time in Canada; it is known from 3 farms near Dixie, Peel Co., Ont.

As a result of a detailed survey of the commercial canning pea areas in Ont. for the last 2 years, Dr. B.H. MacNeill reports that root rot was responsible for the complete loss of several large fields in 2 districts and for serious reductions of yield in many other plantings. Pythium ultimum appeared to be the major pathogen early in the season and Fusarium solani in the later part. A species of Fusarium associated with a vascular disease similar to near wilt was also present. Virus diseases are also important as they caused 20 per cent of the acreage in one district to be abandoned in 1956. One serious outbreak of leaf and pod spot (Ascochyta pisi) was seen in 1956.

Bacterial spot (Xanthomonas vesicatoria) was unusually sev. on peppers in s. Ont. Tomato anthracnose (Colletotrichum phomoides) has become a very troublesome disease in the canning crop in Ont. Spraying does not appear to offer a practical solution because when spraying is stopped as the harvest begins the disease rapidly builds up to destructive proportions.

Fire blight (Erwinia amylovora) was unusually prevalent in the Prairie Provinces, particularly Man. on apples and crabapples and in s. Ont. on apples and pears. The use of organic fungicides against scab (Venturia inaequalis) has resulted in a noticeable increase of powdery mildew (Podosphaera leucotricha) in Ont. Apple scab was not particularly difficult to control in well-sprayed orchards, but failure to maintain good coverage resulted in considerable loss from late season infections. Leaf pucker is a new virus disease of apple first found at Summerland, B.C., in 1954; certain other disorders, possibly of virus origin, are under investigation. Pear blight (Venturia pirina) was rather prevalent in Ont.; recent outbreaks on Bartlett rather suggest the occurrence of physiologic races. Brown rot (Monilinia fructicola) was unusually heavy on sweet cherries in the Kootenays, B.C. Both blossom blight and brown rot were prevalent in the Niagara Peninsula. Indeed, brown rot was destructive to peaches throughout Ont. Although previously unreported to the Survey, bacterial spot (Xanthomonas pruni) appears to be a disease of some importance on peach in s.w. Ont. A survey of the raspberry plantations in Ontario revealed

that anthracnose (Elsinoe veneta) has become a disease of considerable importance which apparently can only be kept in check by a regular spray program. One must also infer that the newer varieties now grown commercially are more susceptible than those cultivated earlier.

Of the diseases of trees and shrubs, the following new records may be noted: Fusicoccum abietinum Prill. & Del. was found causing a twig canker on Abies balsamea in N.B. A new North American record is Trochila ilicis (Chev.) Rehm on leaves of Ilex aquifolium at Victoria, B.C. Gymnosporangium bermudianum Earle, a new rust for Canada, was found on a new host, Juniperus horizontalis, in Bruce Co., Ont.

Among diseases of ornamental plants, the rust Cumminsiella mirabilissima on Mahonia aquifolium deserves special mention. As a result of nursery surveys in Ont. and Que. this rust now appears to be established in these provinces. It was first observed at Ste. Anne de la Pocatiere, Que. in 1949 (P.D.S. 49:107). Since then it has been frequently observed on intercepted material from plants imported from Holland and Belgium and fears (P.D.S. 33:119) were expressed that if importations were continued from western Europe, the rust would soon become established. How serious a pest the rust will prove cannot yet be determined but it may well discourage the future growing of this attractive shrub.